CLAIMS

Sub A1

1. A method for use in connection with a novelty device having a lenticular image selectively caused to move by a drive mechanism and associated sound generating means both of which are controlled by electronics, the movement of said lenticular image allowing the viewing of a plurality of discreet images consecutively which together make up an animation sequence and the method allowing the novelty device to give the appearance that the sound emitted thereby is synchronised to the animation, said method including the steps of delivering a sound signal representative of a sound sample of a predetermined duration to the sound generating means which reproduce said sound sample, deriving a drive signal from said sound signal either in real time or prior to delivery of said sound signal to said sound generating means and delivering said drive signal to said drive mechanism to cause movement of said lenticular image, characterised in that the animation sequence viewable during the motion of the lenticular image is repeated a number of times and for varying periods of time determined by the drive signal during the time that the single sound sample is reproduced by the sound generating means to give the appearance that the animation sequence is of the same duration as the sound sample and that said animation sequence is synchronised with the sound sample.

2. A method according to claim 1 characterised in that the sound signal pre-programmed in the electronics.

3. A method according to any preceding claim characterised in that the lenticular image consists of a plurality of individual images spliced together, each of said images being of the face of a person or character having a mouth in varying stages of

openness, and the sound sample consists substantially of speech.

4. A method according to claim 3 characterised in that the initial image viewable in the animation sequence is that of the face of a character or person having their mouth closed, the animation sequence showing that character or person subsequently opening and then closing their mouth.

5. A method according to any preceding claim characterised in that the drive signal is derived prior to the delivery of the sound signal to the sound generating means.

6. A method according to claim 5 when dependent on claim 3 or 4 characterised in that the drive signal is derived such that the animation sequence is repeated for each syllable of speech reproduced by the sound generating means.

7. A method according to claim 6 characterised in that the duration of each repetition of the animation sequence which is determined by the drive signal varies between each repetition depending on the length of each syllable of speech contained in the sound sample.

8. A method according to any preceding claim characterised in that the lenticular image is caused to move gradually at the beginning and end of the animation sequence by means of a drive signal which is ramped at both the beginning and end of each peak.

9. A method according to any of claims 1-7 characterised in that the lenticular image is caused to move gradually at the beginning and end of the animation sequence by means of suitably damping the drive mechanism so that the delivery of

a stepwise-type drive signal to the drive mechanism results in the gradual motion of the lenticular image.

10. A method according to claim 8 when dependent on claims 3 or 4 or any claim dependent on those claims characterised in that the peaks in the drive signal are maintained for a suitable time depending on the duration of a particular syllable in the speech which constitutes the sound sample.

11. A method according to any of claims 1-4 characterised in that the drive signal is determined in real time electronically using a processor to which the sound signal is delivered in addition to its delivery to said sound generating means, said processor analysing said sound signal for characteristic peaks indicative of syllabic enunciation in speech.

12. A method according to claim 11 characterised in that the processor creates a drive signal based on an algorithm which detects when the peaks in one or more of the characteristics of the input sound signal exceed a predetermined level.

13. A method according to claim 12 characterised in that filter means are employed to remove high frequency artefacts from the sound signal prior to algorithmic processing of the sound signal.

14. An image display device comprising a lenticular image which allows the display of a plurality of individual images in succession by means of the displacement of one or more of the elements of the lenticular image to provide an animation sequence, said device further comprising sound generation means capable of converting a sound signal into sounds of a predetermined duration being sounds of the type an observer would expect to hear on seeing the animation sequence, said

lenticular image being displaced by a drive mechanism actuated in response to a drive signal to allow an observer to see the animation sequence, said drive signal being derived manually or electronically from said sound signal in real time or prior to the delivery of said sound signal to the sound generation means, said driver signal being delivered to said driver means substantially simultaneously with the delivery of the sound signal to the sound generation means, characterised in that in that the animation sequence viewable during the motion of the lenticular image is repeated a number of times and for varying periods of time determined by the drive signal during the time that the single sound sample is reproduced by the sound generating means to give the appearance that the animation sequence is of the same duration as the sound sample and that said animation sequence is synchronised with the sound sample.

15. A device according to claim 14 characterised in that the drive signal and sound signal are combined into a single signal delivered to the sound generation means which causes the reproduction of the sound sample by means of speaker coil movement, said drive mechanism consisting of a mechanical link between the moving element of said sound generation mechanism and the lenticular image or an element thereof.

16. A device according to claim 14 characterised in that a combined sound and drive signal is stored in the memory of a sound chip and passed through a circuit which splits the drive signal from the sound signal for subsequent delivery of each respectively to drive mechanism and sound generation mechanism.

17. A device according to claim 15 or 16 characterised in that the drive mechanism is any mechanism which produces a positive mechanical displacement dependent on the magnitude and/or direction or sign of the current through or potential difference across the mechanism.

18. A device according to claim 17 characterised in that the drive mechanism includes a stepper motor.

19. A device according to claim 17 characterised in that the drive mechanism includes a transducer.

20. A device according to claim 17 characterised in that the drive mechanism includes a mechanically driven cam arrangement wherein the lenticular image or an element thereof rests on the cam which is driven rotationally to move the lenticular image or an element thereof back and forth.

21. A device according to any of claims 14-20 characterised in that the device includes processor means which controls the operation of both a sound chip and the drive mechanism on receipt of an initiation signal ensuring that the sound signal and the drive signal are delivered to the sound generation means and the drive mechanism respectively simultaneously.

22. A device according to claim 21 characterised in that the processor communicates with one or more sound chips having memory associated therewith in which are stored a plurality of different sound signals representative of different sound samples, said processor further communicating with both the said sound chip and one or more sensors which deliver a sensor signals to said processor which subsequently causes the delivery of one or other of the stored sound

signals to the sound generation means depending on the sensor signal received.

23. A device according to claim 22 characterised in that for each stored sound signal there is an associated derived drive signal stored in memory associated with the processor.

24. A device according to claim 22 characterised in that the processor can derive drive signals corresponding to each of the stored sound signals in real time.

25. A device according to claim 22 characterised in that the lenticular image in the device is changeable and the one or more sensors deliver a sensor signal to the processor indicative of the particular lenticular image at any time on display within the device.

26. A device according to claim 25 characterised in that one or other or both of the processor and the one or more sound chips can be re-programmed.

27. A device according to claim 25 characterised in that a plurality of images are contained within the device and the device further includes means for changing which of the lenticular images is on display at any one time.

28. A device according to claim 27 characterised in that the device includes means for scrolling and indexing a web of material behind a lenticular screen, said web having been printed with a plurality of lenticular images which can be singularly viewed behind the lenticular screen on the selection of the user of the device, the drive mechanism causing movement of the screen to animate the image therebehind.

29. A device according to claim 28 characterised in that a remote control feature is included in the device to allow a user to remotely cause a change in displayed lenticular image.

30. A device according to claim 25 characterised in that the user may place different image cards in a suitably shaped receiver, the sensor means detecting which of a plurality of images has been inserted and causing playback of the relevant sound sample associated with that image.

31. A device according to any of claims 25-30 characterised in that indicator means is provided proximate each individual; image at any time displayed by the device, said indicator means means being detectable by the sensor which delivers the corresponding sensor signal to the processor.

32. A device according to any of claims 21-31 characterised in that that the processor communicates with memory incorporated in a mobile telecommunications device into which one or more sound samples can be downloaded.

33. A device according to any of claims 25-32 characterised in that that said processor prevents the delivery of a particular sound signal representative of a particular sound sample unless a successful comparison is achieved between a sensor signal and an signal identifying a particular sound signal.

34. A device according to claim 32 and 33 characterised in that said processor receives the identifying signal from said mobile telecommunications device containing said particular sound sample prior to playback thereof.

35. A device according to any of claims 14-34 characterised in that the drive mechanism causes linear displacement of a

substrate on which a lenticular image is printed relative to a lenticular screen in front of the substrate.

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